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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,055	10/12/2005	Hyun-Woo Lim	3449-0530PUS1	2096
2292 7590 02/25/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER TRINH, SONNY	
			ART UNIT	PAPER NUMBER
			2618	
			NOTIFICATION DATE	DELIVERY MODE
			02/25/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/553,055	Applicant(s) LIM, HYUN-WOO	
	Examiner Sonny TRINH	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16 is/are allowed.
- 6) ☐ Claim(s) 1-5, 7, 9-11 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 6, 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. **Claims 1, 3-4, 10-11, 17-19** are rejected under 35 U.S.C. 102(a) as being anticipated by Cowley et al. (hereinafter "Cowley"; U.S. Patent Application Publication No. 2003/0133049 A1).

Regarding **claim 1**, with reference to figures 1-2, Cowley discloses a digital tuner (abstract, paragraph [0012]) comprising: a splitter for splitting a received RF (radio frequency) signal into several RF signal outputs (figure 1, diplexer and power split 2); an in-band (IB) intermediate frequency (IF) unit for converting an IB signal of the RF signal output into an IB IF signal (figure 1, element 4, paragraph [0004]); an OOB (out-of-band) IF unit for converting an OOB signal of the RF signal output into an OOB IF signal (figure 1, element 3, paragraph [0004]).

Regarding **claim 3**, Cowley further discloses at least one or more IF units (abstract, claims 1, 17, 24, paragraphs [0012], [0018], [0031] – [0036]).

Regarding **claim 4**, Cowley further discloses a demodulator for demodulating signals outputted from the IB IF unit and/or the OOB IF unit (paragraphs [0004], [0030], [0043]).

Regarding **claim 10**, it is inherent that out of band unit processes data and the in band unit processes audio/video signals.

Regarding **claim 11**, Cowley further discloses that a signal inputted to the splitter is transmitted by a cable (figure 1, cable feed 1).

Regarding **claim 17**, with reference to figures 1-2, Cowley discloses a digital tuner (abstract, paragraph [0012]) comprising: a splitter for splitting received signal into several line signals (figure 1, diplexer and power split 2); an OOB IF unit connected to at least one of output lines of the splitter, for converting an OOB signal into an IF signal (figure 1, OOB channel tuner 3, paragraph [0004]).

Regarding **claim 18**, Cowley further discloses a demodulator for demodulating for demodulating an IF signal outputted from the OOB IF unit (paragraphs [0004], [0030], [0043]).

Regarding **claim 19**, Cowley further discloses an IB IF unit in which at least one or more IF units are formed, the IB IF unit being connected to one of output lines of the splitter and converting an IB signal into an IF signal (figure 1, paragraphs [0003] – [0004], the IB tuners are the data channel tuner and main channel tuner other than the OOB tuner).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 2, 5, 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cowley.

Regarding **claim 2**, Cowley discloses the invention including the diplexer and splitter (figure 1, box 2) but does not explicitly disclose that the diplexer connected to a front port of the splitter. It would have been obvious and well within the level of a person of ordinary skill in the art to implement the diplexer to the front of the splitter so that the transmission path is not interfered with the reception path, the splitter is obviously used to separate the receive frequencies only (does not have to worry about the transmit signal).

Regarding **claim 5**, Cowley discloses the invention including the demodulator (paragraphs [0004], [0030], [0043]) and that the tuner can be implemented using integrated circuit / semiconductor (paragraphs [0030] - [0033]) but does not explicitly disclose that demodulator is made by a semiconductor chip. It would have been obvious and well within the level of a person of ordinary skill in the art to implement the demodulator on a semiconductor chip to minimize the circuitry and to save power.

Regarding **claim 7**, Cowley discloses the invention but does not explicitly disclose that the OOB IF unit comprises an OOB mixer for mixing an oscillation

frequency signal received from an outside and an inputted signal. However, it is well known that the mixer employs in-band signaling to process audio/video signal and alternatively, the mixer may inject the additional information into an out-of-band channel associated with the user traffic. Therefore, it is obvious and well within the level of a person of ordinary skill in the art to use a mixer to inject additional data to the user traffic.

3. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Cowley in view of Petrov et al. (hereinafter "Petrov"; U.S. Patent Number 7,113,760).

Regarding **claim 9**, Cowley discloses the invention but does not explicitly disclose a first IF unit for up-converting a signal; and a second IF unit for down-converting the signal from the first IF unit.

In an analogous art, Petrov teaches a direct conversion receiver for amplitude modulated signals using linear/log filtering. Petrov further discloses the direct conversion receive also includes an in-phase branch and a quadrature phase branch, each branch not only including a down-converting mixer and low pass filter, but also including an up-converting mixer that converts the baseband signal to some intermediate frequency.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the down-conversion and up-conversion, as taught by Petrov to the system of Cowley. The motivation for doing so would be to minimize DC offset and noise.

Allowable Subject Matter

4. **Claims 6, 8** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claim 6**, the applied references fail to disclose or render obvious the claimed limitations specifically wherein the OOB IF unit comprises: a filter for passing a signal of a predetermined band out of an RF signal received through the splitter; an attenuator for attenuating a level of an RF signal outputted from the filter; an OOB mixer for mixing a signal received through the attenuator and an oscillation frequency signal received from an outside into an OOB IF signal; an OOB IF filter for passing only a signal of a desired band out of the OOB IF signal outputted from the OOB mixer; and an OOB IF amplifier for amplifying an OOB IF signal outputted from the OOB IF filter into an OOB IF signal of a desired level.

Regarding **claim 8**, the applied references fail to disclose or render obvious the claimed limitations of the digital tuner according to claim 1, wherein the OOB IF unit comprises an OOB mixer for mixing an OOB signal and an oscillation frequency signal, and a demodulator for outputting an oscillation frequency of the OOB mixer is built in the digital tuner.

5. **Claims 12-16** are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 12**, this claim is allowed for the same reasons as in claim 6 above.

Claims 13-15 are allowed by virtue of their dependency on claim 12.

Regarding **claim 16**, the applied references fail to disclose or render obvious the claimed limitations of a digital tuner comprising: a filter for passing only a signal of a predetermined band or below out of an RF signal; an attenuator for attenuating a level of an RF signal outputted from the filter; an OOB mixer for mixing a signal received through the attenuator and an oscillation frequency signal received from an outside into an OOB IF signal; an OOB IF filter for passing only a signal of a desired band out of the OOB IF signal outputted from the OOB mixer; and an OOB IF amplifier for amplifying an OOB IF signal outputted from the OOB IF filter into an OOB IF signal of a desired level and outputting the amplified OOB IF signal through an OOB output line thereof.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

2/8/08


SONNY TRINH
PRIMARY EXAMINER